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January 4, 1995

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Federal Communications Commission
Room 5202, Mail Stop 1700
2025 M Street, N.W.
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Re: Ex Parte Communication in PR Docket No. 93-61
Automatic Vehicle Monitoring (AVM)
on behalf of Amtech Corporation

Dear Ms. Allen:

I am writing to summarize and follow up on our telephone discussion earlier today concerning the AVM proceeding.

Currently, local-area AVM systems serve more than 600,000 road vehicles daily. The number continues to grow as more and more jurisdictions realize the benefits to improved traffic flow and reduced air pollution that come with the automatic collection of tolls. This number is in addition to the over one-million rail cars that have been equipped with tags for the tracking of their locations.

With respect to Amtech's read-write local-area AVM technology, two 6 MHz channels can be time-multiplexed across multiple lanes in both directions (one channel per direction) for automatic revenue collection purposes. This sort of on-site multiplexing would take place regardless of any of any spectrum sharing with wide-area multilateration systems. Indeed, spectrum sharing with the wide-area multilateration systems (as demonstrated in testing conducted by Amtech and Pinpoint) is based, not on time multiplexing, but on the facts that the local-area systems employ antennas that are comparatively lower in height (and typically canted downward toward the road surface) and operate with lower power. In short, local-area AVM sharing with wide-area AVM systems is based on height-power diversity. Such sharing also takes advantage of the near-far effects of the local-area system and the ability of the wide-area system to retry a location pulse if a position fix is not obtained on the first try. A wide-area system is thus able to attempt again to locate the vehicle if the vehicle does not at first receive the request to transmit a location pulse because the vehicle is close to the tag reader of the local-area system. Wide-area AVM systems will also be able to enhance their sharing with local-area systems through the judicious placement of receive sites.

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The technology developed by Amtech for its read-write systems is based on the open standard prepared for the California Department of Transportation by the Lawrence Livermore National Laboratories. It is a standard adopted or under consideration by an increasing number of jurisdictions as they seek to have multiple sources of equipment from different manufacturers.

While two six MHz channels are the minimum necessary for the read-write technology now being implemented in toll applications, there are circumstances that frequently will call for additional spectrum to be available for local-area systems. First, the two six MHz channels severely restrict the flexibility that systems have to achieve a higher level of compatibility with other users of the band. For example, sometimes simply shifting the center frequency of the channel will greatly facilitate the resolution of an incompatibility.

Second, there are other applications of read-write technology that cannot be integrated into the time-multiplexed installations that are used at toll plazas or on overhead gantries where antennas are oriented downward to read tags from cars passing below. Thus, portable applications exist for read-write systems. These include law enforcement, public safety, and transportation applications. For example, a police officer can read the tag of a parked car and write into the tag the time and date of the inspection. Similarly, truck inspections and the nature of hazardous cargo can be recorded in a tag.

In order to address these additional applications, local-area systems should be accorded access to spectrum that would be shared with wide-area systems. A band plan that provides for local-area systems to use spectrum in part of the band with, for example, Part 15 systems, but also to have access on a co-primary basis to a sub-band that is shared with wide-area systems would meet the needs of local-area users for access to more than 12 MHz of spectrum. To this end, Amtech has urged the Commission to make available spectrum that would be shared among wide-area and local-area systems while also making available spectrum for wide-area systems that require exclusivity. The spectrum available to those wide-area systems that seek exclusivity could be made available on an auctioned basis, coupled with appropriate grandfathering provisions.

Please contact me with any questions concerning this matter.

Respectfully,

David E. Hilliard

David E. Hilliard
Counsel for Amtech Corporation

cc: Mr. William Caton, Acting Secretary